

# **EFL Freshman Students' Difficulties with Phoneme-Grapheme Relationships**

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## Abstract

36 Saudi EFL freshmen students, at the College of Languages and Translation, took a listening-spelling test in which they filled out 100 blanks in a dialogue. Results indicated that 63% of the spelling errors were phonemic and 37% were graphemic. It was also found that the subjects had more problems with whole words than problems with graphemes and phonemes. Some of the phonemic problems that the subjects had were inability to hear and discriminate all or most of the phonemes in a word, inability to discriminate vowel phonemes and hear the final syllable or suffix. They mostly had graphemic problems with vowel digraphs, double consonants, silent vowels and consonants, and homophones. A simplification process seems to affect students' spelling errors. A detailed account of EFL students' phonemic and graphemic errors in spelling is given.

**Keywords:** *Spelling errors, spelling weaknesses, graphemic errors, phonemic errors, orthographic problems, phonological problems, college students, second/foreign language spelling, EFL spelling, spelling instruction.*

## 1. Introduction

English spelling is characterized by the inconsistencies in pronunciations and discrepancies in the number and combinations of letters used to represent English sounds (Fay, 1971). Learning to spell English words involves the correct association of phonemes and graphemes and the ability to sequence, segment and transform phonemes into graphemes. The speller needs to coordinate several sources of word knowledge: phonological, orthographic, morphological and semantic (Wong, 1986). Those phonological, semantic, lexical and non-lexical phonological processes can generate spelling, either independently or in an interactive fashion. Oral and written spelling also depend on common processes including an orthographic code and that after this point, each depends on several separate stages of information processing (Margolin, 1984).

A review of the literature has shown numerous studies that investigated spelling acquisition in children who are non-native speakers of English. For example, De-Manrique and Signorini (1994) examined the relationship between phonological awareness, spelling and reading abilities among 39 Spanish-speaking students in grade one who were or were not skilled readers and found that the children relied on phonological recoding. In another study, ESL second graders displayed phonological deficits when compared to native speakers (Wade-Woolley and Siegel, 1997). Poor spellers in grades 3 and 4 produced significantly more Spanish-influenced errors than good spellers (Zutell and Allen, 1988). A study with advanced English-speaking children in grades 4 and 6 children and Spanish-speaking adults learning English showed that adult Spanish speakers made more errors only on consonant doubling and proportionally fewer errors on the spelling of unstressed schwa and silent e than native-speaking children in the study (Bebout, 1985).

Phoneme-grapheme problems that Saudi EFL college students have in spelling have not received any attention in the EFL spelling research. Therefore, the present study aims to investigate the sound-symbol or phoneme-grapheme correspondence problems that Saudi EFL freshmen students at the College of Languages and Translation (COLT) have in spelling English. Specifically, the present study aims to find out the percentage of spelling errors attributed to phoneme-grapheme or sound-symbol relationship deficits; the kinds of phoneme-grapheme problems EFL freshmen students have in spelling English words; and whether there significant differences between good and poor spellers in phoneme-grapheme

errors. Identifying the phoneme-grapheme problems that students have in spelling English words will help college instructors at COLT in diagnosing students' spelling weaknesses and in planning spelling instruction.

## 2. Subjects

Subjects of the present study consisted of 36 EFL female students who were Saudi and native speakers of Arabic. All of the subjects were in their freshman year (second semester) of the translation program at the College of Languages and Translation (COLT), King Saud University, Riyadh, Saudi Arabia. Their ages ranged between 18-19 years old. They were all enrolled in their listening II course that the author taught and were concurrently taking the following EFL courses: Speaking II (3 hours), reading II (4 hours), writing II (4 hours), grammar II (2 hours), vocabulary building II (2 hours) and dictionary skills (2 hours). All of the subjects had 6 language courses in EFL in their first semester of college: Listening I (3 hours), speaking I (3 hours), reading I (4 hours), writing I (4 hours), grammar I (2 hours) and vocabulary building I (2 hours).

## 3. Data Collection and Analysis

The 36 students took a listening-spelling test which consisted of a taped dialogue and the dialogue script in which 100 words were randomly deleted. The dialogue was taken from the students' textbook "*Interactions II: A listening and Speaking Skills* (Gold Edition 2007) by Elaine Kirn and Pamela Hartman (2007). The subjects were reading the dialogue script and filling out the 100 blanks while listening to the same dialogue in full. Students were given time to write the missing words. Distribution of the elipted target words was as follows: 23 words with vowel digraphs, 22 words with silent vowels, 22 words with suffixes, 10 words with double consonants, 10 words with silent consonants, 7 words with consonant digraphs, and 5 words with hidden consonant sounds.

The students' responses were marked by the author. In scoring the dictation, any response that did not match the target word to be entered in the blank in part or in full or was not supplied (left blank) was marked as a misspelling. Spelling errors were then classified into whole word errors and faulty graphemes. *Whole word* errors were those in which the student did not write anything in the blank or in which the target word was substituted by an extraneous word, or by a partially or a fully invented word. *Faulty graphemes* or grapheme clusters refer to faulty written parts of a word such as faulty syllables in initial, medial and final positions; faulty written suffixes and prefixes; faulty written digraphs such as *ch, sh, ck, ph, ea, ee, ei, ie, oa, oo, ou*, and faulty consonant and vowel letters. *Faulty phonemes* or phoneme clusters refer to faulty spoken parts of a word in which the student failed to hear or misheard a written consonant, a vowel, a syllable in initial, medial and final positions, a suffix, or a prefix correctly.

Next, spelling errors were classified as representing phoneme-grapheme problems. *Phonemic* problems refer to errors in which the misspelled word does not sound like the target word because the whole word, a consonant, a vowel, a syllable, a prefix, a suffix, a grapheme or a grapheme cluster was not heard at all, was misheard, was added, or reversed with another. Here the written symbol does not correspond with the spoken sound, syllable or word. Instances of phonemic problems are: Failing to hear or discriminate all or some of the phonemes in the word, failing to hear the correct word sequence, failing to hear the word boundary, failing to discriminate between minimal pairs, failing to discriminate single vowel or consonant phonemes, failing to hear the final syllable or suffix, failing to hear the correct sequence of CV phonemes in a word, vowel phonemes, consonant phonemes or syllables, or failing to recognize flaps and elision.

On the other hand, *graphemic* problems were defined as those instances in which the misspelled word sounds like the written target word, but the written form or grapheme used for the misspelled part does not correspond with the target word or target grapheme. Instances of graphemic problems are: confusing vowel graphemes that have the same sound, confusing consonant graphemes that have the same sound, confusing vowel and consonant digraphs, deleting silent vowels and consonants, doubling of consonants or vowels, reducing double consonants or double vowels, deleting a vowel in vowel digraphs, adding or deleting final silent vowels, reversing CV and VV sequences, representing consonants with hidden sounds phonetically, and substituting a word by another homophone.

Finally, spelling errors of each student were totaled, and the raw scores were converted into percentages. Students' scores were rank-ordered and the highest and lowest 27% (10 students) were isolated for further statistical analysis. The former group constituted the good spellers' group, and the latter constituted the poor spellers' group. An independent T-test was run to find out whether there are differences in the spelling error means scores between good and poor spellers. The Kuder-Richardson reliability coefficient of the spelling test scores was .94. Inter-analyst reliability of classifying the spelling errors into the general and detailed phoneme-grapheme problems was 95%.

## 4. Results and Discussion

### 4.1 Distribution of Spelling Errors

Table (1) shows that EFL freshmen students at the College of Languages and Translation produced a total of 1699 spelling errors: 758 or 44.6% were whole word errors and 941 or 55.4% were faulty graphemes and phonemes. EFL freshmen students produced more spelling errors at the grapheme than word level. On average, a poor speller produced 32 whole word errors and 42 faulty graphemes as opposed to 8 whole word errors and 12 faulty graphemes for a good speller.

Table (1): Frequency of Spelling Errors

Error Types	Good	Poor	Group	
Whole word errors	80	318	758	44.6%
faulty graphemes/phonemes	123	420	941	55.4%
total	203	738	1699	

### 4.2 Distribution of phoneme-grapheme problems

Table (2) shows that the whole group exhibited more phonemic than graphemic problems in EFL spelling. 63% of their spelling errors were phonemic, whereas 37% were graphemic. Poor spellers produced 43% of both phonemic and graphemic errors produced by all the subjects. Good spellers produced 12% of all of the phonemic errors and 7% of all of the graphemic errors produced by all the subjects. Compared to good spellers, poor spellers produced an average of 46 phonemic and 27 graphemic errors as opposed to an average of 13 phonemic and 7.5 graphemic errors by a good speller.

The independent T-test has shown that there are significant differences between good and poor spellers in their phonemic and graphemic awareness ( $T = 18.21, P < .01$ ). Good spellers have a better phonemic as well as graphemic awareness than poor spellers.

Table (2) also shows that all the subjects including good and poor spellers have more problems with whole words than with graphemes, i.e., EFL spellers mainly have difficulty recognizing the spoken word when they hear it. But they produced more errors at the grapheme level, i.e., they recognized the spoken sounds but had difficulty converting those phonemes into written symbols. It can be seen in Table 2 that on average a poor speller could

not identify 31 whole words, misheard 21 phonemes and they misrepresented 21 graphemes. On average a good speller could not correctly hear 7 whole words, misheard 7 phonemes, and misrepresented 5.5 graphemes.

Table (2): Frequency of Phoneme-grapheme Problems

<b>Problems</b>	<b>Examples</b>	<b>Good</b>	<b>Poor</b>	<b>Group</b>
Phonemic problems				
whole word	--	69	307	703
faulty phonemes	incradible	59	158	366
Total	--	128	465	1069
Graphemic problems				
whole word	---	11	11	55
faulty graphemes	bickes	64	262	575
Total	---	75	273	630

The above findings are consistent with findings of other studies in the L1 spelling literature in which poor spellers in grades three and six had difficulty converting sounds into positionally appropriate graphemes (Bruck and Waters, 1988). Visual and auditory discrimination tasks also discriminated between good and poor spellers in grades three and six (Lesiak, 1979). Other studies in L1 found that poor spellers have more graphemic than phonemic problems. For example, Lennox and Siegel (1996) found that average spellers used a phonological approach than a visual approach, while poor spellers used a visual approach. Poor spellers follow a different developmental course in learning to spell with greater success in the use of a visual/orthographic strategy than a phonological strategy. Foorman and Liberman (1989) found that first grade children who are below the grade level applied visual-orthographic knowledge more than phonological coding. On the contrary, findings of the present study are inconsistent with findings of other studies conducted with dyslexic students and students with disordered phonologies. In Manis and Others (1993), dyslexics had primary deficits in phonological processing of speech and print and secondary deficits in orthographic processing. In Clarke-Klein and Hodson's (1995) study, third grade children with histories of disordered phonologies showed more phonologically based deviations in their misspellings, relied on productive spelling strategies and showed poorer phonemic awareness than their peers.

EFL poor spellers in the present study seem to be deficient in the use of spelling-sound rules and they lag behind good spellers in the development of orthographic entries in the mental lexicon. Several studies in the literature gave some reasons for poor phonemic and orthographic abilities in spelling which can be used to explain findings of the present study. For instance, Holmes (1993) indicated that poor spellers' inefficient processing is confined to orthographically structured stimuli. Their failure to retain the detailed knowledge of spellings results from their partial-analysis strategy of word recognition. Lennox and Siegel (1998) also pointed out that good spellers use both phonemes and visual clues to a greater extent than poor spellers. Phonological deficiencies in the stored representations and in short-term memory coding were probably responsible for problems of learning-disabled students (Rubin and Liberman, 1983). Students with disordered spelling have a general difficulty processing phonological complexity (Dodd, Spranger, and Oerlemans, 1989). Visual memory of orthographic sequences differentiates poor and good spellers in grades three and six (Bruck and Waters, 1988). The joint influence of orthographic and phonological knowledge and working memory limitations reflected kindergarten, first, second, and third grade children's non-word spellings. However, these influences vary developmentally (Stage and Wagner, 1992). Poor spellers in second, third and fourth grade had difficulty merging phoneme-grapheme strategies to advance in spelling and reading skills (Roy, 1999).

### 4.3 Specific Phonemic Problems

The specific phonemic problems that good and poor spellers have in spelling are rank ordered in table (3). On average, poor spellers could not hear all of the phonemes in 9 words, could not discriminate most of the phonemes in 8 words, could not discriminate 6 vowel phonemes, misheard 4 vowels, could not hear 2.5 suffixes and final syllables, and confused 3 minimal pairs. Other phonemic problems that poor spellers have are: Hearing and discriminating all or most of the phonemes in a word, hearing and discriminating vowel phonemes, hearing and discriminating the final syllable or suffix, and confusing minimal pairs. On the other hand, good spellers seem to have minimal phonemic problems at the word and phoneme levels. Good spellers are able to hear and discriminate all of the phonemes in a word, can spell minimal pairs correctly, can hear and discriminate vowel phonemes, can hear and discriminate consonants in all positions and can hear and discriminate suffixes

Table (3): Frequencies of Specific Phonemic Problems in Spelling

Phonemic Problems	Examples of Misspellings	Good	Poor	Group
Discriminating most phonemes in a word	Know (worry)	21	76	217
Hearing all phonemes in a word	(No word)	10	91	165
Discriminating vowels	espicially	26	62	156
Hearing suffixes	stay (ing)	11	25	81
Hearing vowels	anther (another)	9	37	65
Confusing minimal pairs	hell (hill)	8	28	64
Discriminating voiced/voiceless C	caple (cable)	5	11	24
Remembering word sequences	up (down)	1	8	16
Hearing consonants	toress (tourist)	3	8	12
Discriminating suffixes	attractive (-ion)	2	8	16
Hearing final syllables	cont	1	3	7
Discriminating consonant phonemes	they (ferry)	2	3	4
Hearing middle syllables	transportion	-	1	1

Findings of the present study are supported by findings of several studies on L1 spelling. For example, Treiman et al (1993) found that the context in which a phoneme occurs influences children's ability to spell.

### 4.4 Specific Graphemic Problems

The specific graphemic problems that good and poor spellers have in spelling are rank ordered in Table (4). On average a poor speller misrepresented 11 vowel digraphs, 5.5 silent vowels, 4 double consonants, and 3 silent consonants. It was found that poor spellers have graphemic problems with vowel digraphs, double consonants, silent vowels, and silent consonants. On the other hand, good spellers have minimal graphemic problems in spelling. They are able to correctly use the written form of hidden sounds, consonants that have the same sound, consonant and vowel digraphs, vowel sequences, silent consonants and vowels, attend to consonant-vowel sequences and discriminate between homophones.

Table (4): Frequencies of Specific Graphemic Problems in Spelling

Graphemic Problems	Examples of Misspellings	Good	Poor	Group
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Vowel digraphs	Cheapest	23	113	230
Silent vowels	Relativs	7	55	133
Double consonants	Midle	23	41	111
Confusing homophones	Whole (hall)	11	11	55
Silent consonants	Exlelant	4	26	38
Remembering vowel sequences	Braek	1	9	19
Consonant digraphs	Brout	2	3	12
Consonant-vowel sequences	Ues (use)	1	2	11
Consonant forms	Echonomical	1	5	9
Phonograms	Conex(connects)	1	6	7
Hidden consonants	Equesion	1	1	4
Silent digraphs	Neaght (neat)	-	1	1

An examination of the spelling error data shows that Saudi freshman students seem to follow a simplification process in spelling English words with double and silent consonants and vowels, and with vowel and consonant digraphs. The simplification process can be explained in the light of the Arabic spelling system which is mainly phonetic. Many weaknesses in identifying graphemes can be attributed to transferring the Arabic spelling system to English. Arabic has no silent and double vowels and consonants and no vowel and consonant digraphs. Another explanation is that poor EFL freshman students in the present study do not seem to associate the word form (as in homophones) with its meaning and do not pay attention to the semantic and syntactic context in which the word occurs while listening to the input.

Some of the findings of the present study are supported by findings of some studies in the L1 and L2 spelling literatures. Simplification seems to be a general strategy used by L1 and L2 spellers.

- Deletion of geminates occurred 10 times more often than deletions of a consonant in a non-geminate cluster (Miceli, Benvegnu and Carmazza, 1995).
- The presence of consonant clusters and digraphs in such words spelled by second, third and fourth grade children revealed that these letter clusters created significant spelling problems for second, third and fourth grade children (Groff, 1986).
- Spanish speakers made more errors involving consonant doubling (Bebout, 1985).
- Older students have greater graphophonemic awareness and greater digraph knowledge than younger students (Ehri and Soffer, 1999).

## 5. Conclusion

At the College of Languages and Translation, spelling receives very little attention in EFL instruction and evaluation. As a result, many phoneme-grapheme problems that Saudi EFL freshman students have in spelling may be due to lack of spelling instruction. To develop phoneme-grapheme awareness in EFL freshmen students, students should receive formal spelling instruction. Spelling instruction should be integrated in listening, reading, and writing and vocabulary courses which the subjects take at COLT. Structured spelling lessons consisting of a series of small, graded steps can be used to help EFL students to transcribe phonemes, i.e., phonics. Spelling can also be taught on the basis of patterns of sound-to-letter correspondences by pairing English sounds with their spelling patterns. Spelling instruction may focus on auditory/visual practice because it was found to be superior to the visual/motor practice in developing elementary school learning-disabled students' spelling ability (Aleman and Others, 1990). Students can be also taught phonemic segmentation skills (van-Bon and Duighuisen, 1995). Spelling instruction should increase the students' sensitivity to basic graphemes, i.e., syllabic structure by breaking words into small segments or words in words

approach (Van-Houten and Van-Houten, 1991; Brooks, 1995). Words can be visualized in terms of syllables and in the case of non-phonetically spelled words, dual pronunciations can be learned: A non-phonetic pronunciation used in speaking and a phonetic one used in spelling (Ormod and Jenkins, 1988). Some of the activities for preventing spelling difficulties suggested by Glenn and Hurley (1993) can be adopted in teaching Saudi EFL freshman students to spell. Those are: fostering use of full cues in reading, encouraging visualization of words and syllables, and teaching spelling patterns and etymology. Finally, studies that investigate the effectiveness of using the instructional strategies proposed above with EFL freshman students are needed.

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